

Summer School *Ecosystems and Land Use Change*

7-14 August 2018, Garmisch-Partenkirchen, Germany



Overview: Food and bioenergy demands of a growing global population and societies' changing lifestyles are increasing the pressures on land and ecosystems. Further pressures arise from the demands on land resources for other ecosystem services, and the variable (often negative) impacts of climate change on plant productivity. These multiple, often seemingly conflicting demands on land and ecosystems are a considerable stumbling-block for achieving sustainability goals. The Karlsruhe Institute of Technology (KIT) will run an international Summer School on the topic of *ecosystems and land use change* during August 2018 at the KIT-Campus Alpin, IMK-IFU (Garmisch-Partenkirchen). The summer school will introduce masters and doctoral students to a wide range of issues related to ecosystem functioning, socio-ecological systems and land use change by covering:

1. Both the biophysical and human processes and concepts needed to understand the broader issues of socio-ecological systems. This will include, amongst others, ecosystem functioning, biodiversity, ecosystem services, resilience, vulnerability, risk management, tipping-points, sustainability and related concepts in the field. We will also explore current understanding of how environmental change (both physical and human changes in the environment) will affect socio-ecological systems. This will include content on international assessment processes such as the IPCC and IPBES.



2. Different aspects of land use change processes across geographic scales and for the past, present and future drivers of change. This will include, for example, land abandonment, extensification vs intensification, deforestation, the role of social networks and knowledge diffusion, the role of pollinators and land management. There will be a focus on land use change assessment methods, including the role of observational data (e.g. from remote sensing and other sources) and land use modelling approaches using interactive exercises and case studies.



Format: The summer school will include a mix of lectures, practical exercises and student presentations and a field excursion in and around the German Alps. The School is open to students currently studying for an MSc or PhD degree with backgrounds in, for example, environmental sciences, geography, environmental economics, meteorology and ecology. There are 25 student places available in 2018. The course will award 5 ECTS (for non-KIT students).

	Day 1 Tues 7 August	Day 2 Weds 8 August	Day 3 Thurs 9 August	Day 4 Fri 10 August	Day 5 Sat 11 August	Day 6 Sun 12 August	Day 7 Mon 13 August	Day 8 Tues 14 August
Morning	Introduction; Presentations a) <i>ecosystems & land use change</i> ; b) <i>ecosystem functioning & ecosystem services</i>	Presentation on <i>species & biodiversity</i> ; Practical exercise on <i>landscape scale analyses of species and biodiversity</i>	Presentation on <i>socio-ecological systems</i> ; Practical exercise on <i>people, biodiversity & ecosystem services</i>	Presentation on <i>past & present land use change</i> ; Practical exercise on <i>drivers & processes of land use change</i>	Field trip in the area	Free time	Presentation on <i>observational data of land use change</i> ; Practical exercise on <i>observational land use change data</i>	Presentation on <i>land use change modelling</i> ; Practical on <i>land use change modelling</i>
Afternoon	Practical exercise on <i>global ecosystem functioning</i>	Practical exercise cont. incl. report & discussion	Practical exercise cont. incl. report & discussion	Practical exercise cont. incl. report & discussion	Field trip in the area	Free time	Practical exercise cont. incl. report & discussion	Practical exercise cont. incl. report & discussion; Wrap-up and close

Lecturers (KIT): Prof. Dr. Almut Arneth, Prof. Dr. Mark Rounsevell, Dr. Richard Fuchs, Dr. Sam Rabin, Dr. Heera Lee, Dr. David Martin Belda, Dr. Calum Brown, Dr. Verena Seufert, Dr. Penelope Whitehorn, Dr. Christine Herschlein, Dr. Bumsuk Seo. External keynote speakers not yet confirmed.



Applications: Applications are open from 1 to 31 March 2018. The cost for travel and accommodation is the student's own responsibility; KIT will cover the remaining cost (lunches, materials and the field excursion). If you wish to apply please send a CV and a letter of motivation (limited to one page), signed by your supervisor, to: sylvia.kratz@kit.edu Successful applicants will be notified by mid April 2018.

This summer school contributes to the Global Land Project (GLP) and the Analysis & Integrated Modelling of the Earth System (AIMES) project of Future Earth.